DOCUMENT RESUME

ED 179 954 CS 205 204

AUTHOR Marzano, Robert J.
TITLE Basic Skills in Composition: Measurement, Competency Testing, Instructional Technique.
PUB DATE Dec 78
NOTE 33p.: Report prepared at the University of Colorado at Denver

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Achievement: *Basic Skills: *Composition (Literary): Elementary Secondary Education: Evaluation: *Minimum Competency Testing: Scoring: Teaching Techniques: *Verbal Development: *Writing Skills
IDENTIFIERS *Composition Research

ABSTRACT

A study was designed to identify highly teachable composing skills that have a strong statistical relationship with composition quality across various grade levels. Sample compositions were randomly selected from the National Assessment of Educational Progress (1972). A total of 750 compositions written by 9-, 13-, and 17-year-old-students (250 for each age level) were analyzed using 43 indices. The five skills that were identified were modification within sentences, subordination between sentences or paragraph development, vocabulary, sentence sense, and usage. The first three skills can be taught by having students rewrite their compositions with specific suggestions from the teacher as to sentences that should be combined or expanded to foster modification within sentences, sentences that should be added to foster more depth of modification between sentences, and words that should be changed to foster more variety of vocabulary. The other two skills can be taught and reinforced by using exercises from currently existing grammar and composition texts. Objective and easily calculated indices were used to measure the skills, and a procedure for establishing minimum competency levels for the skills was applied. (MKM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED179954

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

BASIC SKILLS IN COMPOSITION: MEASUREMENT, COMPETENCY TESTING, INSTRUCTIONAL TECHNIQUE

by

Robert J. Marzano, Ph.D.

University of Colorado at Denver

December, 1978

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Robert J. Marzano

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS205204

INTRODUCTION

The purpose of this paper is to report the results and interpretation of a study conducted by this writer and Dr. Philip DeStefano from 1974 to 1976. The aims of the study were: (1) to identify measures (indices) which have a strong statistical relationship with composition quality across various grade levels; (2) to translate those measures into "skills" of composition-skills that can be readily taught in the classroom; (3) to develop objective and easily administered methods of measuring those skills; (4) to establish a technique for identifying minimum competency criteria for those skills at the state, district or school level; (5) to identify methods for teaching those skills at various grade levels. In keeping with those research aims, this paper will be divided into the following sections:

I. The Sample Compositions
II. Review of Literature to Identify Possible Indices
III. The Analysis of the Data
IV. Identification of Skills
V. Measuring the Skills
VI. Identifying Minimum Competency Levels for Skills
VII. Classroom Application of Skills
VIII. Summary

One major limitation of the study should be introduced before a discussion of the results and interpretation. That limitation is the necessarily subjective nature of the translation into "skills" of those measures found to have a strong statistical relationship with composition quality. Such a translation or interpretation immediately exposes the study to some severe "causality" problems. A statistician would argue that even though an index has a statistical relationship with quality, it does not indicate that whatever the index measures "causes" good quality. And a linguist would, no doubt, bring up another "causality" problem. For example, if it was found that the

relative frequency of adverbial clauses is a good predictor of composition quality a linguist would ask: "What underlying linguistic process is the cause of the use of adverbial constructions?" Some would claim, it is the increased use of what are called "double-based" transformations. (These are discussed later in this paper.) Others would claim that it is the increased use of all linguistic elements relating to time, manner, location and condition. (Most adverbial constructions are statements of time, manner, location or condition.) As this example illustrates, the same result can be explained in two different ways, or (another way of saying this) two different skills can be postulated to explain the same findings. Since the basic goal of this study was to identify skills that are easily measured and useful in the classroom, the criterion of "teachability" was the primary focus in interpreting results. That is, those skills that were most readily translated into usable classroom procedures were selected in the event that two or more skills could explain the same results.

I THE SAMPLE COMPOSITIONS

Seven hundred and fifty compositions were randomly selected from the National Assessment of Education Progress (1972) sample of compositions written by 9, 13 and 17-year-olds (250 compositions per age level). The compositions were all on the same topic and elicited under the same conditions (e.g. time allowed for writing, oral instructions, etc.). The NAEP sample was based on a probability model and included such factors as size of community, income of family, race of student. Hence it was assumed that the 750 composition sample was representative of the writing of 9, 13 and 17-year-olds across the nation. Indeed, considering NAEP's sampling rigor, this was probably the most representative sample ever used as the basis for composition research.

Each essay was rated High, Medium or Low in quality by a team of NAEP raters using a holistic method of scoring. The "holistic" method means

that raters independently judge a composition for "overall" quality, not for specific characteristics such as usage, spelling, etc. Judging a composition for specifics has been termed the analytic method of scoring. The holistic method has been shown to produce both reliable and valid results (Fullman and Anderson, 1967: Marzano, 1975). The holistic method is further discussed in a latter section of this paper.

II REVIEW OF LITERATURE TO IDENTIFY POSSIBLE INDICES

The review of literature indicated that many studies have attempted to identify indices which have a relationship with age or grade of the writer; few have dealt with composition quality. Probably the most well known "age" related study is that conducted by Hunt (1965), who identified 36 indices which had a significant correlation with the grade level of the composition. He found that the length of T-units had the strongest relationship with grade level. (A T-unit is defined as a main clause plus any subordinate clause. Thus a compound sentence will contain as many T-units as there are main clauses, but a complex sentence will contain only one T-unit.) However, T-unit length is a rather gross measure. The other indices are much more specific. Of Hunt's 36 indices 29 were selected for use in this study. They were:

Index 1. Use of AND between T-units
Index 2. Mean clause length
Index 3. Ratio of subordinate to all clauses
Index 4. Mean length of T-units
Index 5. T-units shorter than 9 words
Index 6. Ratio of clauses per T-unit
Index 7. Noun clauses
Index 8. Adjective clauses
Index 9. Adjectives as noun modifiers
Index 10. Genetives as noun modifiers
Index 11. Prepositional phrases as noun modifiers
Index 12. Infinitives as noun modifiers

Index 13. Past participles as noun modifiers
Index 14. Present participles as noun modifiers
Index 15. Factive infinitives
Index 16. Gerunds
Index 17. "Perfect" forms (have + past participle)
Index 18. "Progressive" forms (be + present participle)
Index 19. Passives
Index 20. Use of modals
Index 21. Occurrences of CAN
Index 22. Intransitive verbs
Index 23. Use of BE as main verb
Index 24. Noncomplement adverbials of motion
Index 25. Noncomplement adverbials of time
Index 26. All nonclause noncomplement adverbials
Index 27. Adverbials of manner
Index 28. Predicate adjectives
Index 29. Prepositional phrase complements to adjectives

The Hunt indices excluded from this study were only those which were felt to be redundant in relationship to the other measures. For example, Hunt included a measure of the number of modifiers attached to a nominal. It was decided that indices 8-14 would include that same information.

All of the Hunt indices are measures of syntactic elements, within a sentence, that are based on a "traditional" grammar description of the language. The use of traditional grammar exclusively as a means of describing sentence characteristics would seriously limit any study aimed at describing composition quality; especially since there are many other ways of describing syntax or structure within a sentence.

One method of describing within sentence structure has been developed by Christensen (1963). Christensen states that modification within a sentence is hierarchial. That is, the simplest sentence is one with no modifiers (eg. no adjectives, adverbs, participles, adjective clauses, etc.) We will call a sentence without any of its modifiers a "base" sentence. For example, all the words in the following sentence belong to the base sentence:

John owns a car.

We will arbitrarily say that any word in a base sentence has a "weight" of 1. But suppose we add a modifier to this base sentence:

John owns a blue car.

Now we have a word which modifies a word in the base sentence (blue modifies car). We give a weight of 2 to any word that modifies a word in the base sentence. But modification can occur at any depth (weight).

John owns a bright blue car.

Bright modifies blue which has a weight of 2. Therefore, we give bright a weight of 3. This concept of depth of modification within a sentence has already been shown to have a strong relationship with passage readability (Marzano, 1976). Thus, the following indices were included in the study to determine the relationship depth of modification (within a sentence) has with composition quality:

Index 30. Average depth of modification
Index 31. Weight of deepest modifier

Indices 30 and 31 accounted for structural within sentence elements based on the Christensen concept of the "rhetoric" of sentence style. Another way of looking at within sentence characteristics is through transformational grammar. Transformational grammarians not only describe the elements within a sentence, but they also attempt to explain the origin of those elements. For example, a transformational grammarian would say that the word blue in the sentence:

John owns a blue car.

originated from (or was generated by) the combining of the sentences:

John owns a car.
The car was blue.

The sentence, "The car was blue" was first changed (transformed) to the subordinate clause "which was blue," then transformed to the phrase "of blue" and finally transformed to the word "blue." Then it was inserted or embedded in the sentence "John owns a car." Thus, the sentence that the word blue

originated from, went through a series of transformations before it became the word blue. Most transformations that produce subordinate clause, phrases and single words used as modifiers are termed "double based" transformations. This hypothesized transformational process suggested another index to describe within sentence characteristics:

Index 32. Average number of double based transformations.

Indices 1-32 seemed to account for most syntactic and rhetorical elements within a sentence that have been hypothesized to have a relationship with composition quality. But what about those elements which go beyond the sentence--elements related to paragraph development? Once again, Christensen provided one of the best methods of describing some of those between sentence elements. Christensen states that a well developed paragraph is one in which sentences act as modifiers of one another much like phrases, clauses and single words act as modifiers within a sentence. Sentences can be given a weight depending on their level of subordination. Take for example the following sentences:

(1) The Smith family went on a picnic.

(2) Unfortunately it rained that day.

(3) It came down in buckets.

(2) They didn't let the rain ruin the picnic, though.

(2) They ate in the car.

The most general sentence in the paragraph is the first one. It is, therefore, given a weight of 1. The second sentence tells about what happened when the Smith family went on a picnic. It "modifies" the first sentence and is, therefore, given a weight of 2. The third sentence tells something about the rain--information that is subordinate to or modifies the fact that it rained. Thus, the third sentence is given a weight of 3. The fourth and fifth sentences, once again, relate something about the picnic (level 1) and not about the rain (level 2), so both receive a weight of 2 because they are subordinate to a level 1 sentence.

This concept of weighting sentences was used to develop a measure to test the hypothesis that the good writer is one who uses sentences of increasingly deeper levels of subordination. That measure was:

Index 33. Average depth of between sentence subordination.

The 33 indices mentioned thus far were taken from past research and theory. Composition textbooks were also reviewed, using the logic that "if composition textbooks have exercises in a given skill, then it can be assumed that the skill is one hypothesized to have a relationship with composition quality." The following areas were found to be commonly mentioned in the composition textbooks reviewed: spelling, capitalization, punctuation, agreement of subject/verb and pronoun/antecedent, tense usage, fragments and runons. Thus the following indices were defined:

Index 34. Average number of spelling errors
Index 35. Average number of capitalization errors
Index 36. Average number of punctuation errors
Index 37. Average number of fragments
Index 38. Average number of agreement errors
Index 39. Average number of runon sentences
Index 40. Average number of tense errors.

It is interesting to note that indices 34-40 were all found in composition textbooks and all dealt with "errors" in composing.

Vocabulary was also an area commonly mentioned in composition textbooks. In this study vocabulary was measured in three ways. The first method was to calculate the average number of letters per word in a composition. The reader might balk at this index as a measure of vocabulary; however, the review of literature indicated that word length is a highly significant predictor of word difficulty (Marzano and DiStefano, 1975). The second method of measuring vocabulary was to quantify the number of word choice errors in a composition. To define word choice errors the criteria established by the National Assessment of Educational Progress (1972) were used. The third

index of vocabulary was the ratio of "different" words to "total" words. For example, consider the following sentence:

That car is the car I will buy when I get my next car.

There are 14 total words in the sentence but only 11 are different (car is used three times; I is used twice). Therefore, the ratio for this sentence is 11/14. Thus, the following indices were used to measure vocabulary:

Index 41. Average number of letters per word
Index 42. Average number of word choice errors
Index 43. Ratio of different to total words.

In summary then, there were 43 measures or indices identified from past research as having a strong relationship with composition quality. Indices 1-29 measured within sentence elements based on a traditional grammar description of the language. Indices 30 and 31 described within sentence structure based on a Christensen approach; index 32 utilized transformational grammar to describe within sentence structure. Index 33 dealt with modification or subordination between sentences using the Christensen rhetoric of the paragraph. Indices 34-40 quantified composing errors. Indices 41-43 dealt with vocabulary.

III THE ANALYSIS OF THE DATA

The 43 indices identified in the review of literature were then used to measure each sample composition. That is, each of the 750 compositions (250 for each age/grade level- 9, 13 and 17) were analyzed using the 43 indices. Needless to say, this aspect of the research process was quite time consuming. On the average, it took 30 minutes to analyze each composition using the 43 indices.

Each of the 43 indices was then tested (using separate analyses of

variance and multiple regression analyses) to determine its relationship with high, medium and low quality. The results of all analyses (multiple regression and ANOVA) at all three age/grade levels are too lengthy to discuss here. However, Table 2 identifies those indices that had a significant statistical relationship with composition quality at the different age levels.

Table 1

x indicates significance .05

Index	Name	Age 9	13	17
1	AND between T-units	X	X	X
2	clause length		X	X
3	sub/all clauses	X	X	
4	T-unit length	X	X	
5	short T-units			
6	clauses/T-unit	X	X	
7	noun clauses	X	X	
8	adj. clauses	X	X	
9	adjectives			X
10	genetives		X	X
11	prep phrase as mod		X	
12	inf as mod		X	X
13	past part as mod		X	X
14	pres part as mod			X
15	infinitives		X	
16	gerunds			X
17	perfect forms	X		
18	progressives			
19	passives	X		
20	modals	X		
21	CAN	X		
22	intrans verb			
23	BE as MV			
24	adv of motion		X	X
25	adv of time		X	X
26	noncl noncomp adv		X	X
27	adv of manner		X	X
28	pred adj		X	X
29	prep phrase comp		X	
30	avg wgt of mod		X	X
31	wgt of deepest mod		X	X
32	double based trans	X	X	X
33	betwn sent sub	X	X	X
34	spelling	X	X	X
35	capitalization			
36	punctuation			
37	fragments			X
38	agreement			X
39	runons	X	X	X
40	tense errors			X
41	letters/word	X	X	
42	word choice errors		X	X
43	dif /total words	X	X	X

At first glance Table 1 might appear to be uninterpretable. But upon close inspection one finds some fairly strong patterns. Let us first consider the traditional grammar within sentence measures (Indices 1-29). At the 9-year-old level the use of subordinate clauses seems to be a major factor determining quality. The better compositions at age 9 invariably had more subordinate clauses (see indices 3,6,7 and 8). However, at the 17-year-old level this was not a factor in quality. (The good vs. poor compositions for 17 year-olds had equal amounts of subordinate clauses.) Quality for 17-year-olds' compositions was a function of the use of modifiers that were generally smaller than a phrase (Indices 9, 10, 13, 14, 24, 25, 26, 27 were significant predictors of quality at age 17 and these indices all measure single words used as modifiers--eg. adjectives, genetives, past and present participles.) For 13-year-olds quality seemed to be a function of the use of subordinate clauses and phrases but not single word modifiers (see Indices 3,6, 7, 8, 11, 15, 24, 25, 26, 27, 28). Double based transformation (Index 32) was related to quality at all ages. T-unit length was a significant predictor of quality at ages 9 and 13 but not 17. The Christensen within sentence depth of modification indices (30 and 31) were related to quality at ages 13 and 17 but not 9. The error measures of spelling (34) and runons (39) were a factor in quality at all ages, but fragments (37), agreement errors (38) and tense errors (40) were related to quality for 17-year-olds only. Word choice errors (42) was a significant factor for 13 and 17-year-olds; word length (41) for 9 and 13-year-olds and "different" words for 9, 13 and 17-year-olds (43). The measures of verb complexity (Indices 17-23) were related to quality at the 9-year-old level but capitalization and punctuation (35 and 36) were not related to quality at any level. Although Table 1 does not show it, between sentence subordination (Index 33) had the strongest relationship to quality at all age levels.

In summary, the results of the data analysis indicated that quality for 9-year-old writers is a function of: (1) use of subordinate clauses,

(2) infrequency of spelling and runon errors, (3) the development of paragraphs by using sentences that are subordinate to other sentences in the paragraph, (4) the complexity of verbs and (5) the use of different words to express repeated concepts. Quality in composing for 13-year-olds is determined by the same factors that influence quality for 9-year-olds (except complexity of verbs). But composition quality for 13-year-olds is also a function of the use of phrases and depth of modification. Composing quality at age 17 is a more complex issue (and logically so). It is determined by: (1) the use of phrases as modifiers and single words used as modifiers (but not subordinate clauses), (2) the depth of modification of single words and phrases, (3) the infrequency of all types of errors (except for capitalization and punctuation), (4) the development of paragraphs and (5) the type of words used.

IV IDENTIFICATION OF SKILLS

The results of the data analysis lent themselves nicely to interpretation in terms of skills. As students grow older, there appears to be a progression from the use of subordinate clauses to phrases to single word modifiers as structural within sentence factors influencing composition quality. This is not to say that 9-year-olds use more subordinate clauses in their sentences than 13 and 17-year-olds. In fact, the contrary is true. Seventeen-year-olds used more subordinate clauses, phrases and single word modifiers than 13-year-olds who used more than 9-year-olds. It appears, then, that the use of subordinate clauses is a skill that develops somewhere at the elementary level. Those elementary school children who have acquired the use of subordinate clauses generally write better compositions than those who haven't mastered their use. But 9-year-olds (even good writers at that age) are not very adept at using phrases and single word modifiers. The use of phrases seems to develop somewhere around the 13-year-old level. Those 13-year-olds who

have acquired this ability write better compositions. The use of single word modifiers doesn't fully develop until somewhere around the 17-year-old level. But by that age even poor writers use subordinate clauses and phrases well (as is evidenced by the fact that good vs. medium vs. low quality writers at the 17-year-old level used about the same amount of phrases and subordinate clauses).

So then, can we say that use of subordinate clauses, phrases and single word modifiers are skills of composing which develop at the elementary, junior high and senior high levels respectively? Or are all three really extensions of the same skill? As was mentioned previously, a transformational grammarian would call Index 32 (double based transformations) a measure of the extent to which clauses, phrases and single word modifiers are components of the same skill. That is, a transformational grammarian would explain the production of subordinate clauses, phrases and single word modifiers as components of the same process - the process of reducing and embedding sentences. This means that, following transformational theory, the skill of producing a single word modifier (eg. an adjective) would involve a three step process. The student would start with a sentence (called a kernel) and transform it to a subordinate clause (transformation #1); then transform that subordinate clause to a phrase (transformation #2); then transform that phrase to an adjective (transformation #3). The skill of producing a phrase would involve only two steps (transformations 1 and 2), and the skill of using a subordinate clause would involve only one step (transformation #1). This seems to fit well with our results (Index 32 had a significant relationship with quality at all age levels) and has some intuitive appeal. (Use of single word modifiers involves many transformations; "therefore," it is a more complex operation than use of phrases and clauses.) However, this explanation of the use of clausal, phrasal and single word modifiers has not stood up to current empirical tests (Marzano, 1978) and has met with severe criticism from the linguistic

world (Hermanns, 1972). In light of these criticisms it seemed logical to conclude that three aspects of composition quality are: (1) use of subordinate clauses, (2) use of phrases and (3) use of single word modifiers. It would not be valid, at this time, to identify the precise psycholinguistic process involved in the production of these syntactic elements. To reject one common psycholinguistic explanation (the transformational process) of these three types of structures does not mean that some other common explanation might not be validated at some later date. Therefore, we found it safe to label all three elements as modifiers and to identify as a skill of composing:

Skill #1. Modification within sentences. This skill has three forms: (1) subordinate clauses, (2) phrases and (3) single word modifiers, which seem to develop at different age levels.

The data also support a second skill of composing, which will be termed:

Skill #2. Subordination between sentences. (Paragraph Development)

It appears that writers deal with modification or subordination in two basic forms. One form is within a sentence (Skill #1). The student embellishes upon the basic idea in a sentence by adding modifying ideas in the form of subordinate clauses, phrases and single words. This same process of embellishing via modification is done between sentences. Writers add sentences within a paragraph which modify the thesis sentence. The more sophisticated the writer becomes, the more he/she is able to add sentences which not only modify the thesis sentence but modify sentences which are, themselves, modifiers of the thesis sentence (as the third sentence in our sample paragraph, "It came down in buckets," modifies the second sentence, "Unfortunately it rained that day," which modifies the thesis sentence).

A third skill of composition might be called:

Skill #3. Sentence sense.

The identification of this skill is a consequence of the fact that use of

runons is related to quality at all ages but the use of fragments does not become an issue until high school. This is not to say that younger students don't use fragments. They do, but it's not until the later years that student compositions become long enough that the frequency of use of fragments starts to affect composition quality.

A fourth skill of composition appears to be:

Skill #4. Usage.

At the elementary level this primarily involves spelling (which carries through to the later years). As students become older, subject/verb, pronoun/antecedent and tense agreement become issues. Once again, this is not to say that elementary students do not make errors in tense or agreement. At the elementary level compositions contain sentences whose structures are simple enough that subject/verb, pronoun/antecedent problems rarely arise. For example, a common cause of agreement problems between subject and verb occurs when there are intervening phrases between the subject and the verb. Consider the following agreement error:

The pep-talks given to the team by the captain was very useful.

The subject (pep-talks) which is plural and the verb (was) which is singular should agree but the intervening phrase, "given to the team by the coach," has probably made the writer confused as to the subject of the sentence. Since elementary school students write few intervening phrases, there is less occasion for subject/verb agreement errors to arise:

The final skill identified was:

Skill #5. Vocabulary.

Roughly translated this means the use of different words to express redundant concepts in a composition. That is, rather than use the same word to express a concept, which is repeated in a composition, the good writer will choose different words to express that concept. This skill carries through at all age/grade levels and there is a gradual trend to use a higher frequency of "different" words as students grow older.

V MEASURING THE SKILLS

Each of the five skills lend themselves readily to objective measurement techniques which can be used in the classroom. What is perhaps most useful about the skills is that each can be objectively measured using a sample of a student's writing. Most objective tests of composition ability utilize multiple choice, fill-in or true-false items.

eg.

Which of the following sentences has an agreement error between the subject and verb:

a). Bill and Mary are going.
b). Bill or Mary are going.
c). Bill is going.
d). None of the above.

The major problem with such tests is that they are "recognition" rather than "composition" or "production" tests. A student might be able to recognize an error when confronted with one, but such an ability does not necessarily mean that the student will avoid such errors when he/she composes. Hence, the validity of multiple choice, true-false and fill-in items to test composing ability is questionable. This fact adds an intrinsic desirability to measures which can be applied directly to student writing.

A student who is to be measured in the five identified skills should first write an essay of about 10 sentences in length. Since this study was done using expository and descriptive essays its findings are probably best limited to those types of writing. Hence it is suggested that the 10 sentence student composition be of a descriptive or expository nature. After the composition sample is elicited from a student, the five skills can be measured. The technique for measuring each skill will first be discussed and then a method for measuring all five skills simultaneously will be presented.

Skill #1: Modification Within Sentences

As was discussed previously, this skill manifests itself by the use of subordinate clauses, phrases and single word modifiers. A good measure of the skill then is the extent to which students use subordinate clauses, phrases and single word modifiers in their writing. The easiest way to quantify their use is to form the ratio:

$$\frac{\text{\# of words in composition}}{\text{\# of main clauses in composition}}$$

As the reader will recall from Section II of this paper, a sentence without any modifiers (eg. no adjectives, adverbs, participles, prepositional phrases, adjective and adverb clauses) is called a "base" sentence. Another way of stating this is that a "base" sentence is a main clause without any modifiers. Thus if a composition is made up of sentences without any subordinate clauses, phrases or single word modifiers the ratio, words/main clauses will reflect only the words used in the main clauses. Since main clauses, without modifiers, can be formed in a very limited number of ways (eg subject-verb-object; subject-verb-indirect object-object; subject-linking verb-adjective; subject-linking verb-noun) this ratio will be fairly constant across all grade levels when there are no subordinate clauses, phrases or single word modifiers in the composition. However, as modifiers are added to a composition this ratio gradually increases. For example, consider the following paragraph (it is obviously contrived for illustration purposes):

I like candy. It is good. I gave Dad a piece. He liked it.

There are no subordinate clauses, phrases or single word modifiers in this paragraph; its ratio of words/main clauses is 14/4=3.5. Now let us consider that same paragraph with some subordinate clauses, phrases and single word modifiers added:

I like chocolate candy. It is really good. I gave my Dad a piece which was extra. He liked it like me.

The ratio of words/ main clause in this paragraph is 22/4=5.5. Hence the ratio words/main clauses is a fairly sensitive indicator of use of subordinate clauses, phrases and single word modifiers.

Skill #2: Between Sentence Subordination (Paragraph Development).

The sentence weighting procedure (see discussion of Index 33 in Section II) can be used to measure skill #2. The best method of doing this is to find the topic sentence and assign it a weight of 1. Every other sentence is then read and the question posed: "On which sentence is the one I am currently reading dependent?" A sentence receives a weight one higher than the weight of the sentence on which it is dependent. The ratio of total sentence weight/ total sentences can then be formed. Referring again to the sample paragraph used to describe Index 33, we see that the assigned weights are:

(1) The Smith family went on a picnic.
(2) Unfortunately it rained that day.
(3) It came down in buckets.
(2) They didn't let that ruin the picnic, though.
(2) They ate in the car.

The ratio of total sentence weight/ total sentences for this paragraph is (1+2+3+2+2)/5= 10/5=2.00. This ratio is sensitive to paragraph development via the use of sentences of "deeper and deeper" dependence (higher weights). For example, consider what happens to the above paragraph if we add sentences of weight 3:

(1) The Smith family went on a picnic.
(2) Unfortunately it rained that day.
(3) It came down in buckets.
(3) It was the worst downpour of the year.
(3) It was like standing under a waterfall.
(2) They didn't let that ruin the picnic, though.
(2) They ate in the car.

The ratio for this paragraph is 16/7 which is an increase from 2.00 to 2.29. The addition of the two 3 weight sentences, then, has increased the sophistication of the paragraph and has increased the ratio.

Skill #3: Sentence Sense

This skill is manifest by the use of "complete" sentences within a composition. The easiest way to measure this skill is in an inverse fashion. That is, a good measure of the skill is the lack of use of fragments and runons. Once again, a ratio can be formed. The number of fragments and runons in a composition can be counted along with the number of main clauses and the ratio number of fragments and runons/ number of main clauses formed. Since this is an inverse measure of sentence sense, the smaller the ratio becomes the better the student's "sentence sense."

Skill #4: Usage

This skill is evidenced by: (1) correctly spelled words, (2) correct agreement between subject/verb, pronoun/antecedent and (3) use of consistent tense. As was the case with Skill #3, this skill is best measured in an inverse fashion. That is, the number of spelling, agreement and tense errors can be counted and the ratio formed total number of errors/ total number of words. The closer this ratio comes to zero, the better the writer's ability to correctly use the rules and conventions governing spelling, agreement and tense.

Skill #5: Vocabulary

This skill is illustrated by the use of different words to express redundant concepts. Less skilled writers tend to use the same words to express the same concepts over and over again in an essay. Consider the following paragraph:

> The fire began small. Then it became a big fire. It was such a big fire that many people had to come and fight the fire. Some of the people lost their lives in the fire.

The word fire is used five times in this essay, the words people and big are each used twice. Consider the effects if these words are replaced with synonyms or pronouns when they are used a second (third, fourth, etc) time:

> The fire began small. Then it became a big blaze. It was such a large fire that many people had to come and fight it. Some of the workers lost their lives in the holocaust.

Most composition teachers would agree that the vocabulary level of the second composition is far superior to that of the first. This hightened vocabulary level was accomplished by replacing words in the composition used "more than once" with synonyms or pronouns. An index which is sensitive to non redundancy in word usage is the ratio:

$$\frac{\text{number of words used for the first time}}{\text{total number of words.}}$$

For the first composition that ratio is 25/36=.69. For the second composition that ratio is 30/35=.87. Thus, the ratio increases as more and more different words are used to express redundant concepts in a composition.

Measuring the Five Skills Simultaneously

The five indices just described represent objective and accurate measures of the five skills identified via the data analysis. These five indices can all be applied to a composition simultaneously by using the following procedure:

1) Count the number of words in the composition and label that number A: A= words

2) Count the number of main clauses and label that number B: B= main clauses

3) Count the number of runons and fragments: C=runons and fragments

4) Count the number of spelling errors, agreement errors and tense errors: D=total number of errors

5) Count the number of words used for "the first time" in the composition. E=number of words used for the first time

6) Assign sentence weight and add those weights: F=total sentence weight

7) Count the number of sentences: G=sentences:

These seven steps can be accomplished quite rapidly with any composition of moderate size (10 sentences). The information acquired from these steps can then be used to calculate the five indices:

Index #1: Modification within sentences= A/B

Index #2: Paragraph development = F/G

Index #3: Sentence Sense = C/B

Index #4: Usage = D/A

Index #5: Vocabulary = E/A

VI IDENTIFYING MINIMUM COMPETENCY LEVELS FOR THE SKILLS

Given that a state, district or school chooses to establish minimum competency levels for the five skill areas, those competency levels can be established using the following procedure:

1) Within each grade level for which competency levels are desired, have a representative sample of students write compositions on a given topic.

2) Have a team of raters independently rate each composition for quality using a holistic method of rating. A scale with three quality values (high, medium, low) is sufficient. (Since competency levels will be set for each grade level, the composition should be scored for quality independently

for each grade level.) The holistic method of scoring compositions for quality is best described as the "overall impression" method. Using the three values (high, medium, low) an individual rater would take all compositions for a grade level and read each one very rapidly (no more than one minute per composition). After a composition is read, it is then placed in one of three piles: the High quality pile, the Medium quality pile and the Low quality pile. After compositions are sorted into quality piles, they are given weights; those in the high pile receive a weight of 3, those in the medium pile a weight of 2 and those in the low pile a weight of 1. These weights should be recorded on the back of each composition so as not to bias the next rater.

3) The same process is then repeated by a second, third, etc rater. When all raters have completed their task, each composition will have as many quality scores recorded on the back (3=High, 2=Medium, 1=Low) as there are raters. It has been shown (Follman and Anderson, 1967) that if five or more raters are used the multiple R among ratings will be above .90. This indicates that the average quality rating for a composition which has been independently scored by five raters will be very reliable.

4) The average rating for each composition is then calculated and the compositions rank ordered (within grade levels) in terms of their quality ratings.

5) The mean and standard deviation of quality ratings should then be calculated for each grade level.

6) At each grade level those compositions that have an average quality rating which is one standard deviation below the mean should be selected. These compositions can be considered those that represent "minimum competency" for that grade level, in terms of writing quality. Of course, the criterion of one standard deviation below the mean is quite arbitrary. A district or school might decide that those compositions whose quality ratings are "on the mean" represent minimum competency, or a district/school might decide to set the level at two standard deviations below the mean, etc. Such decisions can be made only by those knowledgeable about the student and parent population

within the district/school.

7) Once the minimum competency compositions have been identified for each grade level, those compositions should then be scored using the five indices described in the previous section.

8) For each grade level, the mean for each of the five indices should then be calculated. Hence, for each grade level one would obtain five means; one for each measure. Those means represent the average scores, on the five indices, that minimum competency writers obtained within each grade level. Thus, those means can be considered minimum competency levels for the five skills at each grade level used.

The eight step procedure just described was applied to a sample of the compositions used in the study and the minimum competency levels reported in Table 2 were established. Where there were no compositions for a grade level, linear interpolation was used.

TABLE 2

	Skill #1	Skill #2	Skill #3	Skill #4	Skill #5
Grade 4	7.70	1.50	.20	.14	.61
Grade 5	8.61	1.60	.18	.13	.63
Grade 6	9.52	1.70	.16	.11	.65
Grade 7	10.40	1.80	.14	.10	.67
Grade 8	11.41	1.90	.12	.09	.69
Grade 9	12.14	1.95	.11	.08	.72
Grade 10	12.89	2.00	.11	.07	.74
Grade 11	13.65	2.05	.10	.06	.77
Grade 12	14.41	2.10	.09	.05	.79

It should be emphasized that Table 2 was developed for illustrative purposes only. It is not intended to be representative of national minimum competency scores for the five skills. This writer feels that competency levels should be determined at the district or school level.

VII CLASSROOM APPLICATION OF THE SKILLS

The competency levels derived from the procedure outlined in the previous section, can be used as exit requirements for each grade level and/or as a diagnostic tool with which to plan instruction. As exit requirements, the competency standards might be used in the following manner: before being promoted to another grade level, a student would have to exhibit the ability to write a composition that met the minimum competency standards for his/her grade level on all five skills or on four of five skills, etc. Of course, the use of minimum competency standards as exit requirements is a very complex and controversial issue and should probably be the subject of much debate and study before implemented. However, the use of minimum competency standards as diagnostic planning devices is a far different issue. Within this use students entering a grade level would write a composition and the composition scored for the five skills. Any skill on which the student's score was below the minimum standard for the grade level being entered, would be considered a skill that particular students needed instruction and practice on, before matriculating to the next grade. Of course, this implies that methods are available to teach and reinforce each skill at various grade levels. Fortunately, such techniques do exist. Teaching strategies for each skill will be discussed separately.

Skill #1. Modification Within Sentences

In grades 3-6 (approximately) emphasis should be placed on the

modification of an idea within a sentence via the use of subordinate clauses. In grades 7-9 within sentence modification using subordinate clauses and phrases should be taught, and in grades 10-12 emphasis should be placed primarily on generating single word modifiers. But how can this concept of within sentence modification be taught? Strong (1976) and others (Mellon,1969) feel that it can best be taught by sentence-combining. This is a very structured type of practice in reducing sentences to subordinate clauses or phrases or single word modifiers and then "embedding" those reduced structures in another sentence. For example, using the sentence combining technique a teacher would give students the following simple sentences:

a) The contest entries will be judged by four art professors.

b) The professors are from the university.

Students would then be asked to keep sentence a the same but to change sentence b and place it in (embed it in) sentence a so that there is only one sentence expressing both ideas. At the elementary school level students would be taught to change the sentence to be embedded into a subordinate clause:

> The contest entries will be judged by four art professors who are from the university.

At the junior high level students would be taught to change the embedded sentence to a phrase:

> The contest entries will be judged by four art professors from the university.

At the high school level emphasis would be placed on reducing sentences to single word modifiers:

> The contest entries will be judged by four university art professors.

It has been suggested (DiStefano and Marzano, 1978) that while sentence-combining practice is good, it requires quite a bit of preparation on the part of the teacher (generating sentences) and/or a set of expensive materials.

Perhaps the benefits of sentence-combining can best be gained by a sentence-combining "rewrite" technique. After a student has written a composition, the teacher can go over the composition with the student and identify sentences that could be "rewritten" as subordinate clauses, phrases and single word modifiers. There also exists an alternative method, to sentence-combining, for increasing modification within sentences. That method has been termed the "expansion" method.

In the expansion method a student is given a simple sentence and asked to expand on that sentence by adding clauses, phrases or single word modifiers. For example, the following type of exercise could be constructed for students:

Base Sentence: Bill fed the dog.

Add:
1) a clause telling when Bill fed the dog
2) a single word modifier telling something about the dog
3) a phrase telling why Bill fed the dog.

The expansion method can also be used via the rewrite technique. A teacher can mark a student's composition identifying where specific types of clauses, phrases and single word modifiers could be added. The student would then rewrite the composition adding those elements suggested by the teacher. The expansion method would also provide a platform from which traditional grammar terminology (eg. "subordinate clauses," "infinitive phrases," etc.) could be taught in a highly meaningful way to students; meaningful in the sense, that the grammar terms would be necessary for a teacher to communicate to students which structures should be added. This might provide "relevance," to students, for grammar terminology. A relevance that has been lacking in the past.

Skill #2. Subordination Between Sentences

As was mentioned previously, sentences can be given a "weight" depending on their level of subordination. In elementary school compositions,

weights are generally no higher than 2 or 3. For good writers at the high school level, however, it is not uncommon to find weights as high as 5 and 6. Once again using the rewrite technique students can be taught this skill without the use of new terminology. For example, the teacher can look over a student's composition and assign weights. Let's say a student wrote the following composition and the teacher gave those sentences the weights in parentheses:

a. I went to the store. (1)
b. There, I bought a candy bar. (2)
c. I also bought some bananas. (2)
d. I bought peanuts too. (2)

This is a very simple and unsophisticated paragraph as is evidenced by the pattern of low weights, 1, 2, 2, 2. Seeing this pattern of low weights, the teacher could tell the student to rewrite the paragraph and add:

1) a sentence after b telling something about the candy bar.
2) a sentence after c telling something about bananas.

The student's rewritten composition might read something like the following:

I went to the store.
There I bought a candy bar.
It was filled with chocolate and nuts.
I also bought some bananas.
However, I'm really not very fond of bananas.
I bought peanuts too.

Thus the student has increased the sophistication of his paragraph by adding sentences of increasingly deeper modification. Since this technique requires no special terminology, it can be used at any grade level.

Skills 3, 4 and 5

Skills 3 and 4 (sentence-sense and usage) can be taught using fairly traditional methods. Sentence-sense is an area that apparently needs re-emphasis at all grade levels. And most standard grammar and composition textbooks have exercises devoted to sensitizing students to the use of fragments and runons. Exercises in agreement errors can also be found in

virtually all grammar textbooks. Specifics as to subject/verb, pronoun, antecedent and tense agreement should not be overemphasized at the elementary school level but should receive considerable attention from junior high on. Spelling should be treated, in depth, at all grade levels.

Vocabulary, (Skill #5) might best be fostered by the rewrite technique similar to that used for skills 1 and 2. Words in a student's composition that have been "overused" might be identified and the student asked to rewrite the composition replacing those identified words with different words.

VIII SUMMARY

In summary, then, the results of the study lent themselves rather nicely to the identification of five highly "teachable" composing skills. They are teachable in the sense that 3 out of 5 skills (1, 2 and 5) can be taught and fostered by having students rewrite their compositions with specific instructions from the teacher as to: (1) sentences that should be combined or expanded to foster modification within sentences; (2) sentences that should be added to foster more depth of modification between sentences, and (3) words that should be changed to foster more variety of vocabulary. The other two skills (3 and 4) can be taught and reinforced using exercises from currently existing grammar and composition texts. Thus all five skills could be immediately incorporated into most composition programs without the purchase of additional materials. Objective and easily calculated indices were described for the measurement of the skills; a procedure for establishing minimum competency levels for the skills was also outlined.

REFERENCES

Calder, N. The Mind of Man. New York: The Viking Press, 1970.

Christensen, F. "A Generative Rhetoric of the Sentence." College Composition and Communication. 1963, 14, no. 3, 155-161.

Davis, M. A Comparative Analysis of Sentences Written by Eighth Grade Students Instructed in Transformation-Generative Grammar and Traditional Grammar. (Doctoral dissertation, Boston University) Ann Arbor, Mich. University Microfilms, 1967. No. 66-14, 776.

DiStefano, P. and Marzano, R. "Basic Skills in Composition: A New Approach." English Education, Vol. 9, No. 2, Winter, 1978, pp. 117-121.

Follman, J. and Anderson, J. "An Investigation of the Reliability of Five Procedures for Grading English Themes," Research in the Teaching of English, Vol. 1, No. 2, 1967, pp. 190-200.

Hermanns, F. "Descriptions of Deep Structures Are Translation Into Artificial Languages," Linguistics, 1972, No. 99, pp. 71-77.

Hunt, K. Grammatical Structures Written at Three Grade Levels. NCTE Research Report No. 3. Champaign, Illinois: National Council of Teachers of English, 1965.

_____. "How Little Sentences Grow into Big Ones," New Directions in Elementary English. National Council of Teachers of English, 1967.

Jurgens, J. "Relationship Between Overall Quality and Seven Language Features in Composition Written in Grades Seven, Nine, and Eleven," ERIC, ED 046 932, 1974.

Loban, W. Language Ability: Grades Ten, Eleven and Twelve. Project No. 2387. Berkeley: University of California, Berkeley, 1967.

Marzano, R. "In Search of the Major Skill of Comprehension," ERIC, May, 1976

_____. "On the Validity of Analytic Ratings," Ohio English, September, 1975, pp. 1-4.

_____. "Path Analysis and Language Research," Research in the Teaching of English, Vol. 12, No. 1, Winter, 1978, pp. 77-89.

_____. and DiStefano, P. "The Skills of Composition and Their Diagnosis," Mimeographed paper, University of Colorado, 1978.

_____, and DiStefano, P. Di Comp: A Diagnostic System for Teaching Written Composition (Teacher's Manual). Wylie-Padol Publishing, Inc., Indian Rocks Beach, Florida, 1977.

Mellon, J. Transformational Sentence Combining: A Method for Enhancing the Development of Syntactic Fluency in English Composition. NCTE Research Report No. 10. Champaign, Illinois: National Council of Teachers of English, 1969.

National Assessment of Educational Progress. Report 10. Washington, D.C. 1972.

O'Donnell, R., Griffin, W., and Norris, R. Syntax of Kindergarten and Elementary School Children: A Transformational Analysis. NCTE Research Report No. 8. Champaign, Illinois: National Council of Teachers of English, 1967.

Strong, W. "Sentence-Combining: Back to the Basics," English Journal, Vol. 65, No. 2, February 1976, pp. 56-64.